



US006307878B1

(12) **United States Patent**  
Sokolov et al.

(10) Patent No.: **US 6,307,878 B1**  
(45) Date of Patent: **Oct. 23, 2001**

(54) **CELLULAR TELEPHONY SEARCHER**

5,978,412 \* 11/1999 Tukni ..... 375/130

(75) Inventors: Dotan Sokolov, Raanana; David Ben-Eli, Modiin, both of (IL)

\* cited by examiner

(73) Assignee: DSPC Technologies LTD, Petach Tirva (IL)

Primary Examiner—Chi Pham

Assistant Examiner—Khai Tran

(74) Attorney, Agent, or Firm—Mark M. Friedman

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(57) **ABSTRACT**

A searcher for a mobile station of a cellular telephony network. Pilot signal from nearby base stations are correlated with a pseudonoise sequence inside a search window, using a bank of correlators. Each correlator is assigned a different delay, from among a sequence of delays in the window. At each delay, correlation is performed initially for a first dwell time. If the resulting correlation value exceeds a threshold, the correlation is continued for a second dwell time. Otherwise, the correlator is set to the next delay in the sequence. Only the outputs of second dwell correlations are used to identify the nearest base station. Some correlators may perform first dwell correlations at new delays in the window at the same time that other correlators are still performing second dwell correlations at old delays in the window.

(21) Appl. No.: 09/324,515

(22) Filed: Jun. 3, 1999

(51) Int. Cl.<sup>7</sup> ..... H04L 27/30

(52) U.S. Cl. .... 375/150; 375/144

(58) Field of Search ..... 375/150, 144, 375/142, 148, 343, 347; 370/342; 455/509

(56) **References Cited**

**U.S. PATENT DOCUMENTS**

5,216,693 \* 6/1993 Nakamura ..... 375/130  
5,396,515 \* 3/1995 Dixon et al. .... 375/150  
5,809,064 \* 9/1998 Fenton et al. .... 375/150

**23 Claims, 3 Drawing Sheets**

